Trend Study 20-7-03

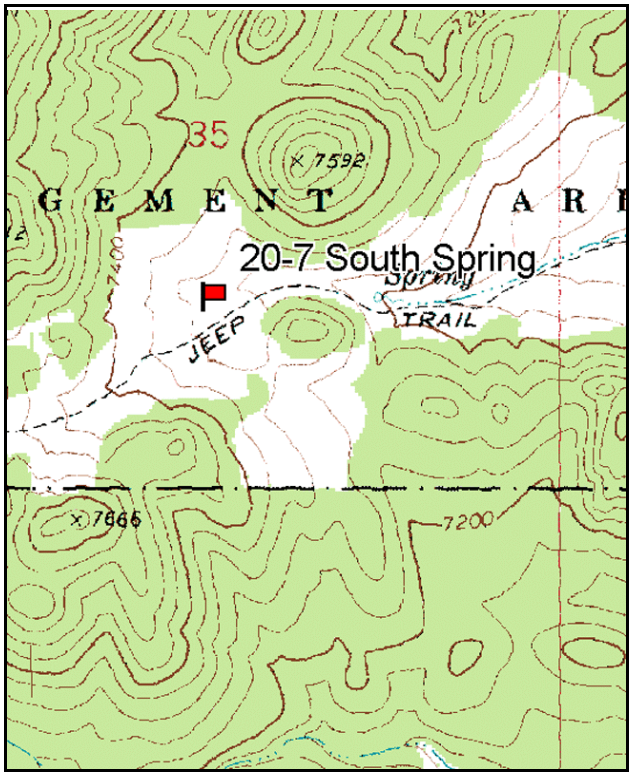
Study site name: South Spring . Vegetation type: Mountain Big Sagebrush .

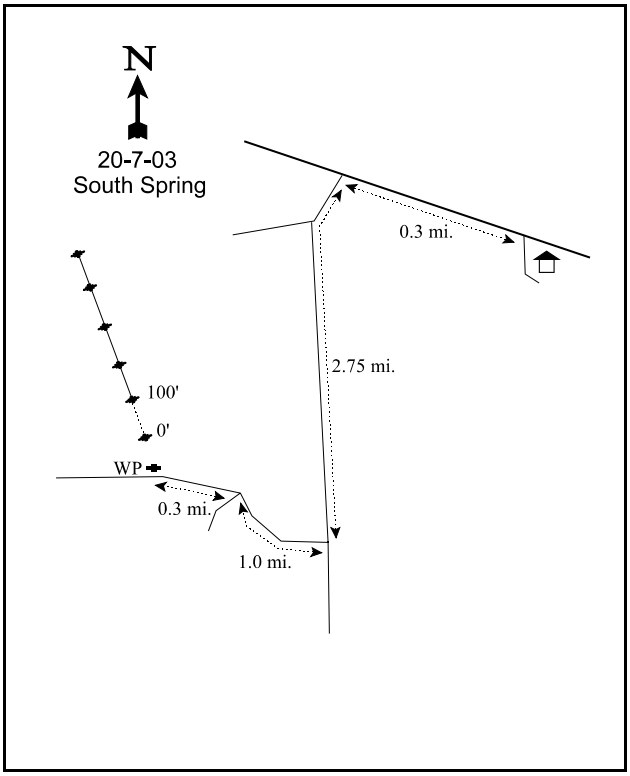
compass bearing: frequency baseline 307 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

From the Indian Peaks Cabin, go 0.3 miles to an intersection west of the cabin. At the intersection, turn left and drive 2.75 miles to another right (closed road). Follow this for 1.0 miles to a fork near a spring with a trough. Take a right and drive 0.3 miles into a sagebrush/grass flat and to the witness post on the right (north) side of the road. The 0-foot stake is 8 paces at 303 degrees magnetic from the witness post.





Map Name: Pinto Spring

Diagrammatic Sketch

Township 29S , Range 18W , Section 35

GPS: NAD 27, UTM 12S 4235939 N, 252432 E

DISCUSSION

South Spring - Trend Study No. 20-7

The South Spring trend study was established in 1999 to monitor the effect of a control burn on a sagebrush community and subsequent wildlife use in the area. The transect samples a small valley which originally supported a population of mountain big sagebrush with a good understory of grass. The area had been chained in the early 1960's. The slope is a gentle 5% to 7% with an east-southeast aspect and an elevation of approximately 7,100 feet. The area had been used by cattle, deer, and elk in the past. In 1999, the pellet group transect estimated 4 cow, 15 deer, and 74 elk days use/acre (9, 36, and 184 days use/ha respectively). The site was supposed to have been burned in the fall of 1999 but may have been burned the following year. In 2003, the pellet group transect estimated 2 cow, 13 deer, and 89 elk days use/acre (5, 31, and 220 days use/ha respectively). These values are quite similar to those of 1999.

Soil on the site is moderately deep with an effective rooting depth of almost 16 inches. Texture is a sandy loam which is slightly acidic (pH 6.4). Soil parent material is granitic in origin. The soil is fairly stony with pavement near the surface. Initially, pavement cover was a little over 8% in 1999. In 2003, after the fire, there has been some obvious surface soil losses to the wind and a few high intensity storms. Percent pavement cover in 2003 has increased to over 53%. However, herbaceous vegetation cover is still moderately abundant (almost 21% in both sampling periods) and significant erosion does not currently appear to be a problem.

Before the control burn, the most prominent browse species of this community was mountain big sagebrush with a cover value of almost 14%. The community was fairly typical with percent young at only 1% and percent decadence at 29%. After the control burn, mountain big sagebrush density decreased from 4,100 plants/acre to only 40 plants/acre in 2003. There was scattered individuals of bitterbrush (140 plants/acre) sampled in 1999 which have all been lost to the fire. The preferred browse component which made up this community has been essentially lost to the control burn. The only common shrub found on the site is stickyleaf low rabbitbrush which increased in density from 580 plants/acre prior to the burn in 1999, to 1,200 plants/acre in 2003. A few rubber rabbitbrush and gray horsebrush are also found on the site.

In 1999, the herbaceous understory was dominated by seeded grasses, primarily crested wheatgrass, which provided 63% of the grass cover. Smooth brome and intermediate wheatgrass were also fairly common. They made up 15% and 12% of the grass cover respectively. All grasses combined produced almost 18% total cover. In 2003, after the control burn and with continuing dry conditions, grass cover has decreased by 54%. For example, crested wheatgrass has gone from producing 11% total cover to less than 1% in 2003. Overall, the most common perennial grasses all showed significant decreases except for intermediate wheatgrass which actually increased after the burn. Productivity for grasses would be considered only fair compared to 1999. Forbs have increased significantly. However, the improvement is almost entirely made up of silvery lupine which increases after fire. Lupine increased from a cover value of a little over 2% in 1999 to over 12% after the fire, and has contributed 98% of the forb cover in both surveys. The other forbs combined to make up less than 1% cover.

1999 APPARENT TREND ASSESSMENT

Trend for soil appears stable due to the abundant vegetation and litter cover, combined with the gentle terrain. The trend for the key browse species, mountain big sagebrush, appears to be stable or maybe more appropriately should be called stagnant and at carrying capacity. The herbaceous understory is initially good but basically a monoculture of crested wheatgrass.

2003 TREND ASSESSMENT

Trend for soil appears to be down with vegetative cover decreasing by 38% and litter cover decreasing by 70%. With the removal of much of the vegetation and litter cover due to fire, pavement cover has increased 6 fold. Trend for browse is also down with the loss of mountain big sagebrush and bitterbrush. Browse cover has decreased from 15% to less than 3%. Eighty-five percent of the remaining browse cover is currently contributed by the increaser stickyleaf rabbitbrush. The herbaceous trend is down because the sum of nested frequency of perennial grasses has declined by 66% since the fire. In addition, the majority of the herbaceous cover (60%) is made up by the increaser, silvery lupine.

TREND ASSESSMENT
soil - down (1)
browse - down (1)
herbaceous understory - down (1)

HERBACEOUS TRENDS --
Management unit 20 , Study no: 7

Type	Species	Nested Frequency		Average Cover %	
		'99	'03	'99	'03
G	Agropyron cristatum	b297	a9	11.23	.22
G	Agropyron dasystachyum	a-	b61	-	1.56
G	Agropyron intermedium	52	70	2.17	4.23
G	Bouteloua gracilis	2	2	.03	.03
G	Bromus inermis	b118	a10	2.78	.07
G	Bromus tectorum (a)	b117	a59	1.16	1.80
G	Elymus cinereus	-	-	-	.03
G	Oryzopsis hymenoides	15	5	.55	.19
G	Sitanion hystrix	6	-	.01	-
G	Stipa comata	2	9	.00	.17
Total for Annual Grasses		117	59	1.16	1.80
Total for Perennial Grasses		492	166	16.78	6.52
Total for Grasses		609	225	17.95	8.33
F	Amaranthus spp.	-	-	-	.00
F	Astragalus spp.	2	1	.03	.00
F	Eriogonum racemosum	-	-	.03	-
F	Lithospermum ruderale	-	-	-	.00
F	Lupinus argenteus	a83	b118	2.51	12.23
F	Lygodesmia spinosa	-	-	-	.01
F	Navarretia intertexta (a)	-	-	-	.30
F	Phlox longifolia	a-	b23	-	.05
F	Sphaeralcea coccinea	-	2	-	.03

Type	Species	Nested Frequency '99	Nested Frequency '03	Average Cover % '99	Average Cover % '03
Total for Annual Forbs		0	0	0	0.30
Total for Perennial Forbs		85	144	2.57	12.33
Total for Forbs		85	144	2.57	12.64

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Management unit 20 , Study no: 7

Type	Species	Strip Frequency '99	Strip Frequency '03	Average Cover % '99	Average Cover % '03
B	Artemisia tridentata vaseyana	81	2	13.75	.15
B	Chrysothamnus nauseosus hololeucus	0	5	-	.00
B	Chrysothamnus viscidiflorus viscidiflorus	21	35	.45	2.51
B	Juniperus osteosperma	1	0	.00	-
B	Pinus monophylla	2	0	-	-
B	Purshia tridentata	6	0	.03	-
B	Tetradymia canescens	7	11	.53	.30
Total for Browse		118	53	14.77	2.97

CANOPY COVER, LINE INTERCEPT --
Management unit 20 , Study no: 7

Species	Percent Cover '03
Chrysothamnus nauseosus hololeucus	.26
Chrysothamnus viscidiflorus viscidiflorus	3.36
Tetradymia canescens	.71

POINT-QUARTER TREE DATA --
Management unit 20 , Study no: 7

Species	Trees per Acre	
	'99	'03
Juniperus osteosperma	48	0
Pinus monophylla	76	0

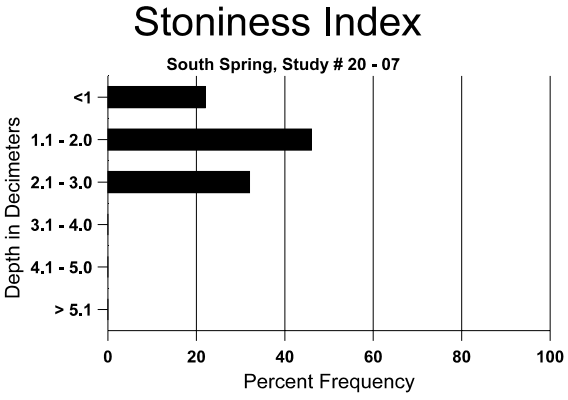
Average diameter (in)	
'99	'03
1.4	0.0
3.2	0.0

BASIC COVER --
Management unit 20 , Study no: 7

Cover Type	Average Cover %	
	'99	'03
Vegetation	36.65	22.70
Rock	.08	.10
Pavement	8.43	53.25
Litter	58.56	17.32
Cryptogams	.18	0
Bare Ground	8.90	15.23

SOIL ANALYSIS DATA --
Management unit 20, Study no: 7, Study Name: South Spring

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	ds/m
15.7	68.0 (15.8)	6.4	72.0	15.4	12.6	2.5	12.3	256.0	0.5



PELLET GROUP DATA --
Management unit 20 , Study no: 7

Type	Quadrat Frequency	
	'99	'03
Rabbit	8	46
Elk	28	83
Deer	8	9
Cattle	2	-

Days use per acre (ha)	
'99	'03
-	-
74 (183)	89 (220)
15 (36)	13 (31)
4 (9)	2 (5)

BROWSE CHARACTERISTICS --
Management unit 20 , Study no: 7

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Artemisia tridentata vaseyana											
99	**4100**	-	40	2860	1200	740	38	1	29	15	28/33
03	**40**	-	20	20	-	-	50	0	0	0	11/12
Chrysothamnus nauseosus											
99	**0**	-	-	-	-	-	0	0	-	0	-/-
03	**0**	-	-	-	-	-	0	0	-	0	20/31
Chrysothamnus nauseosus hololeucus											
99	**0**	-	-	-	-	-	0	0	-	0	-/-
03	**120**	-	60	60	-	-	0	0	-	0	17/23
Chrysothamnus viscidiflorus viscidiflorus											
99	**580**	-	100	440	40	-	0	3	7	0	17/17
03	**1200**	20	40	1160	-	-	5	0	0	0	14/20
Juniperus osteosperma											
99	**20**	-	20	-	-	60	0	0	-	0	-/-
03	**0**	-	-	-	-	-	0	0	-	0	-/-
Pinus monophylla											
99	**40**	-	40	-	-	20	0	0	-	0	-/-
03	**0**	-	-	-	-	-	0	0	-	0	-/-
Purshia tridentata											
99	**140**	-	20	80	40	-	14	71	29	29	15/28
03	**0**	-	-	-	-	-	0	0	0	0	-/-
Tetradymia canescens											
99	**280**	-	-	280	-	-	0	0	-	0	15/17
03	**340**	100	-	340	-	-	0	6	-	0	10/16